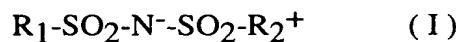


We claim:

1. A zwitterionic imide compound according to formula (I):



wherein  $R_1$  is selected from the group consisting of straight-chain, branched,

5 cyclic and aromatic groups, including saturated and unsaturated groups, including heteroatomic groups, and including any of the above which are substituted; and

wherein  $R_2^+$  is any cationic group selected from the group consisting of straight-chain, branched, cyclic and aromatic groups, including saturated and unsaturated groups, including heteroatomic groups, and including any of the above which are substituted.

10 2. The zwitterionic imide compound according to claim 1, wherein  $R_2^+$  is an aromatic group.

15 3. The zwitterionic imide compound according to claim 2, wherein  $R_2^+$  is a heterocyclic group.

4. The zwitterionic imide compound according to claim 3, wherein  $R_2^+$  contains a cationic nitrogen atom.

20 5. The zwitterionic imide compound according to claim 1, wherein  $R_2^+$  contains a functional group selected from the group consisting of: pyridiniumyl, pyridaziniumyl, pyrimidiniumyl, pyraziniumyl, imidazoliumyl, pyrazoliumyl, thiazoliumyl, oxazoliumyl, and triazoliumyl.

25 6. The zwitterionic imide compound according to claim 1, wherein  $R_2^+$  contains a quaternary ammonium cation.

7. The zwitterionic imide compound according to claim 1, wherein  $R_2^+$  contains a tetraalkyl ammonium functional group.

8. The zwitterionic imide compound according to claim 7, wherein alkyl substituents of said tetraalkyl ammonium functional group contain 1 to 8 carbons.

9. The zwitterionic imide compound according to claim 1, wherein  $R_1$  is a highly halogenated hydrocarbon group.

10 10. The zwitterionic imide compound according to claim 1, wherein  $R_1$  is a highly fluorinated hydrocarbon group.

11. The zwitterionic imide compound according to claim 8, wherein  $R_1$  is a highly halogenated hydrocarbon group.

15 12. The zwitterionic imide compound according to claim 8, wherein  $R_1$  is a highly fluorinated hydrocarbon group.

13. The zwitterionic imide compound according to claim 1 having a melting point 20 of less than 100°C.

14. The zwitterionic imide compound according to claim 10 having a melting point of less than 100°C.

25 15. The zwitterionic imide compound according to claim 12 having a melting point of less than 100°C.

16. The zwitterionic imide compound according to claim 1 having a solubility in water of less than 5% by weight.

17. The zwitterionic imide compound according to claim 12 having a solubility in water of less than 5% by weight.

18. The zwitterionic imide compound according to claim 15 having a solubility in water of less than 5% by weight.

19. A zwitterionic liquid having a melting point of less than 100°C.

20. The zwitterionic liquid according to claim 19 which is an aromatic zwitterionic liquid.

21. The zwitterionic liquid according to claim 19 having a solubility in water of less than 5% by weight.

15 22. The zwitterionic liquid according to claim 21 which is an aromatic zwitterionic liquid.

20 23. A polymer electrolyte membrane having absorbed therein the zwitterionic imide compound according to claim 1.

24. A polymer electrolyte membrane having absorbed therein the zwitterionic imide compound according to claim 8.

25. A polymer electrolyte membrane having absorbed therein the zwitterionic imide compound according to claim 12.

26. A polymer electrolyte membrane having absorbed therein the zwitterionic liquid according to claim 19.

30 27. An electrochemical device comprising the polymer electrolyte membrane according to claim 23.

28. An electrochemical device comprising the polymer electrolyte membrane according to claim 24.

5 29. An electrochemical device comprising the polymer electrolyte membrane according to claim 25.

30. An electrochemical device comprising the polymer electrolyte membrane according to claim 26.

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